

REMARKS

A Petition for Extension of Time is being concurrently filed with this Amendment. Thus, this Amendment is being timely filed.

Reconsideration is respectfully requested in view of the foregoing amendments to the specification and claims.

Status of Claims

In the present Amendment, claims 1, 2, 14 and 19 have been amended, claims 16, 17, 23, 24, 29 and 30 have been canceled without prejudice or disclaimer of the subject matter contained therein, and claims 31-32 have been added. Claims 3-5, 8-10, 12, 15, 18, 21 and 25-27 were previously canceled without prejudice or disclaimer of the subject matter contained therein. This makes claims 1, 2, 6, 7, 11, 13, 14, 19, 20, 22, 28 and 31-32 as pending in the above-identified application.

No new matter has been added with these amendments. Support for the amendments to copolymer (A) of claims 1, 2 and 14 have support in paragraphs [0125]-[0158] of US 2006/0102306 A1. In particular, Table 1 discloses the specific monomers as well as the specific weight ratios of monomers (I)-(III) (e.g., for the recited range of 10-34%, nonionic unsaturated monomer (I) is present at 10% in copolymer A-5 and at 34% in copolymer A-7). Otherwise, claims 1, 2 and 14 have been amended to correct typographical errors. The amendment to claim 19 is also clarifying in nature and minor in character.

No new matter has been added with the new claims, which have been added for the Examiner's consideration. Support for new claim 31 is found in claim 1, as amended, as well as

paragraphs [0007], [0045], [0046], [0113], [0114] of US ‘306. New claim 32 has support in original claim 6.

No new matter has been added with the amendments to the specification as typographical errors are being corrected.

In view of the following remarks, Applicant respectfully requests that the Examiner withdraw all rejections and allow the currently pending claims.

Claim Objections

Claims 28 and 29 are objected to as stated on page 2 of the Office Action. These claims have been canceled, thereby rendering this objection moot. However, Applicants note the corrections to the misspellings in the present specification as shown herein.

Issues under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claim 19 for reciting “the water-soluble polymer (C),” wherein independent claim 1 does not refer to a water-soluble polymer (C). Applicants have corrected the antecedent basis problem. Thus, withdrawal of this rejection is respectfully requested.

Issues under 35 U.S.C. § 103(a)

Claims stand rejected under 35 U.S.C. § 103(a) in view of newly cited **Connors ‘422** (U.S. Patent No. 6,020,422), in combination with newly cited **Linhart ‘002** (U.S. Patent No.

6,303,002) and **Fallon '380** (previously cited) and as evidenced by **Xiao et al. '392** (previously cited) and **Smook** (previously cited) (Office Action at pages 4-11).

Also, claim 28 stands rejected under 35 U.S.C. § 103(a) in view of Connors '422, Linhart '002 and Fallon as applied to claim 1, and further in view of newly cited **Keiser '089** (U.S. Patent No. 6,372,089) (pages 12-13 of Office Action).

Applicable U.S. Case Law

M.P.E.P. § 2143 sets forth the guidelines in determining obviousness.

First, the Examiner has to take into account the factual inquiries set forth in *Graham v. John Deere*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), which has provided the controlling framework for an obviousness analysis. The four *Graham* factors of: determining the scope and content of the prior art; ascertaining the differences between the prior art and the claims that are at issue; resolving the level of ordinary skill in the pertinent art; and evaluating any evidence of secondary considerations (e.g., commercial success; unexpected results). 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

Second, the Examiner has to provide some rationale for determining obviousness, wherein M.P.E.P. § 2143 set forth some rationales that were set established in the recent decision of *KSR International Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Here, Applicants respectfully submit that the Examiner has not appropriately resolved the *Graham* factors, including ascertaining the differences between the prior art and the claims that are at issue and evaluating any evidence of secondary considerations, and the rationale in combining the cited references is improper.

Graham Factor of Evidence of Secondary Considerations (Unexpected Results)

Applicants note M.P.E.P. § 2145, which states that rebuttal evidence may include evidence of “secondary considerations,” such as “commercial success, long felt but unsolved needs, [and] failure of others.” *Graham v. John Deere Co.*, 383 U.S. at 17, 148 USPQ at 467; *see In re Corkill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985). In this regard, Applicants respectfully refer the Examiner to the independent claims as shown herein, which now recite specific monomers for copolymer (A).

Also, Applicants further submit that this rejection under § 103(a) is overcome because evidence of unexpected results is in the present specification and it is improper to not consider such evidence of patentability for the present invention. *See In re Soni*, 54 F.3d 746, 34 USPQ2d 1684 (Fed. Cir. 1995) (error not to consider evidence in the specification); M.P.E.P. § 2144.08(II)(B). In particular, Applicants note the unexpected results based on the Examples depicted in Tables 4, 5, and 6 of the present specification. Table 1 gives a list of copolymers A-1 through A-10. These same copolymers (which correspond to copolymer (A) of the present invention) are tested for bulky value (g/cm³), brightness, opacity and (ratio in) burst index (%) as shown in Tables 4, 5 and 6.

(i) Table 5

Table 5 is reproduced below for the Examiner’s convenience. Table 5 shows testing of copolymers A-1 to A-10 (all at 1.0 parts by weight) with one of copolymers B-1 through B-10 (all at 1.0 parts by weight). The Comparative Examples 1-1 through 1-6 (on page 12 of US ‘306) in Table 5 test only one of components A or B (or C). Applicants note that the amounts of

copolymer A or B is the same as that in the Inventive Examples. As can be seen in Table 5, the present invention achieves unexpected results in terms of bulkiness, brightness, opacity and burst index ($\text{kPa}/(\text{g}/\text{m}^2)$). For instance, compare Inventive Example 1-4 having copolymer A-4 with Comparative Example 1-1, which differs by only lacking component B. Inventive Example 1-4 achieves significantly better burst index, as well as a combination of the other properties of bulkiness, brightness and opacity.

TABLE 5

Product of the invention	Composition						deinked pulp			
	Copolymer (A)		Surfactant (B)		Water soluble polymer (C)		Bulk density (g/cm^3)	Brightness (%)	Opacity (%)	Burst index [$\text{kPa}/(\text{g}/\text{m}^2)$]
	Addition kind	amount (%)	Addition kind	amount (%)	Addition kind	amount (%)				
1-1	A-1	1.0	B-1	1.0	—	—	0.382	57.5	92.6	1.17
1-2	A-2	1.0	B-1	1.0	—	—	0.384	57.6	92.1	1.43
1-3	A-3	1.0	B-1	1.0	—	—	0.367	58.3	93.1	1.49
1-4	A-4	1.0	B-1	1.0	—	—	0.361	58.1	93.7	1.66
1-5	A-5	1.0	B-1	1.0	—	—	0.387	57.7	92.2	1.86
1-6	A-6	1.0	B-1	1.0	—	—	0.377	57.9	92.7	1.76
1-7	A-7	1.0	B-1	1.0	—	—	0.370	58.0	92.8	1.57
1-8	A-8	1.0	B-1	1.0	—	—	0.378	58.2	93.0	1.88
1-9	A-9	1.0	B-1	1.0	—	—	0.374	58.1	93.0	1.77
1-10	A-4	1.0	B-1	1.0	C-1	1.0	0.379	58.3	93.4	2.36
1-11	A-4	1.0	B-1	1.0	C-2	1.0	0.386	58.3	92.8	2.40
1-12	A-3	1.0	B-2	1.0	—	—	0.387	57.9	92.9	1.85
1-13	A-3	1.0	B-3	1.0	—	—	0.399	57.6	92.1	2.10
1-14	A-3	1.0	B-4	1.0	—	—	0.362	58.4	93.9	0.98
1-15	A-3	1.0	B-5	1.0	—	—	0.368	58.2	93.6	1.24
1-16	A-3	1.0	B-6	1.0	—	—	0.369	58.4	93.6	1.18
1-17	A-3	1.0	B-7	1.0	—	—	0.372	58.4	93.9	1.16
1-18	A-3	1.0	B-8	1.0	—	—	0.387	57.7	92.7	2.03
1-19	A-3	1.0	B-9	1.0	—	—	0.400	57.8	92.1	2.05
1-20	A-3	1.0	B-10	1.0	—	—	0.405	57.7	91.4	2.08
1-21	A-10	1.0	B-1	1.0	—	0	0.363	58.2	93.6	1.71

TABLE 5-continued

Composition								
	Copolymer (A)	Surfactant (B)	Water soluble polymer (C)					
	Addition kind	amount (%)	Addition kind	amount (%)	Addition kind	amount (%)	Bulk density (g/cm ³)	Brightness (%) Opacity (%) Burst index [kPa/(g/m ²)]
<u>Comparative product</u>								
1-1	A-4	1.0	—	—	—	—	0.410	57.7 92.0 2.24
1-2	—	—	B-1	1.0	—	—	0.414	57.7 91.3 2.14
1-3	—	—	—	—	C-1	1.0	0.430	56.8 90.5 3.18
1-4	—	—	—	—	C-2	1.0	0.426	56.9 91.3 2.99
1-5	—	—	B-1	1.0	C-1	1.0	0.424	57.2 90.8 3.08
1-6	Blank (without any paper quality improver)					—	0.418	57.4 91.6 2.24

(ii) Table 4

Table 4 is reproduced below for the Examiner's convenience. In the 21 inventive examples, Table 4 shows testing of copolymer (A) (all at 1.0 parts by weight) with one of copolymers B-1 through B-10 (all at 1.0 parts by weight). The 6 Comparative Examples in Table 4 test are formulations wherein only one of components A or B (or C) is present. As can be seen in Table 4, the present invention achieves unexpected results in terms of bulkiness, brightness, opacity and ratio in burst index over those comparative examples that does not include one of the components A or B.

One of the features of this invention is to mix (A) and (B) in the paper quality improver. If (A) and (B) are not mixed together, as instantly claimed, the paper quality improvement is not achieved (see, e.g., Inventive Example 1-4 versus Comparative Examples 1-1 and 1-2 in Table 4 below).

TABLE 4

Paper quality improver No.	Composition									standard improved ratio in burst index (%)	
	Copolymer (A)	Surfactant (B)		Water soluble polymer (C)		properties					
	kind	addition amount (parts by weight)	kind	addition amount (parts by weight)	kind	addition amount (parts by weight)	standard improved bulky value (g/cm ³)	standard improved brightness (point)	standard improved opacity (point)		
<u>Product invention</u>											
1	A-1	1.0	B-1	1.0	—	—	0.0530	0.0	2.6	-897	
2	A-2	1.0	B-1	1.0	—	—	0.0530	0.4	1.4	-600	
3	A-3	1.0	B-1	1.0	—	—	0.0730	0.9	2.5	-457	
4	A-4	1.0	B-1	1.0	—	—	0.0770	0.7	2.7	-438	
5	A-5	1.0	B-1	1.0	—	—	0.0450	0.4	1.4	-370	
6	A-6	1.0	B-1	1.0	—	—	0.0560	0.6	2.5	-380	
7	A-7	1.0	B-1	1.0	—	—	0.0590	0.5	2.7	-502	
8	A-8	1.0	B-1	1.0	—	—	0.0610	0.9	2.4	-394	
9	A-9	1.0	B-1	1.0	—	—	0.0600	0.8	2.2	-345	
10	A-4	1.0	B-1	1.0	C-1	1.0	0.0450	0.9	3.1	57	
11	A-4	1.0	B-1	1.0	C-2	1.0	0.0480	1.0	3.0	53	
12	A-3	1.0	B-2	1.0	—	—	0.0420	0.6	1.9	-417	
13	A-3	1.0	B-3	1.0	—	—	0.0260	0.5	0.7	-235	
14	A-3	1.0	B-4	1.0	—	—	0.0770	1.2	3.2	-730	
15	A-3	1.0	B-5	1.0	—	—	0.0690	1.0	2.8	-647	
16	A-3	1.0	B-6	1.0	—	—	0.0670	1.2	3.4	-701	
17	A-3	1.0	B-7	1.0	—	—	0.0630	1.2	3.6	-768	
18	A-3	1.0	B-8	1.0	—	—	0.0420	0.4	1.9	-224	
19	A-3	1.0	B-9	1.0	—	—	0.0250	0.5	0.8	-331	
20	A-3	1.0	B-10	1.0	—	—	0.0210	0.4	-0.3	-406	
21	A-10	1.0	B-1	1.0	—	—	0.0750	0.8	2.5	-434	
<u>Comparative product</u>											
1	A-4	2.0	—	—	—	—	0.0140	0.1	0.6	284	
2	—	—	B-1	2.0	—	—	0.0120	0.5	-0.4	-433	
3	—	—	—	—	C-1	1.0	-0.0170	-0.5	-0.3	Indefinable	
4	—	—	—	—	C-2	1.0	-0.0100	-0.4	0.1	Indefinable	
5	—	—	B-1	2.0	C-1	1.0	-0.004	-0.2	-1.5	Indefinable	
6	blank (without any paper quality improver)						—	—	—	Indefinable	

(iii) Table 6

Table 6 is reproduced below for the Examiner's convenience. Table 6 shows testing of 9 inventive formulations having copolymer (A) (ranging from 0.3 to at 1.0 parts by weight) with copolymer B-1 (at different amounts ranging from 0.3 to 1.0 parts by weight). The 5 Comparative Examples in Table 6 test only one of components A or B (or C). As can be seen in Table 6, the present invention achieves unexpected results in terms of bulkiness, brightness, opacity and burst index (kPa/(g/m²)).

TABLE 6

Composition										
Copolymer (A)			Surfactant (B)		Water soluble polymer (C)		LBKP			
kind	Addition amount (%)	kind	Addition amount (%)	kind	Addition amount (%)	Bulk density (g/cm ³)	Brightness (%)	Opacity (%)	Burst index [kPa/(g/m ²)]	
<u>Product of the invention</u>										
2-1	A-4	1.0	B-1	0.3	—	—	0.535	81.7	88.0	2.80
2-2	A-4	1.0	B-1	0.5	—	—	0.527	82.2	88.0	2.64
2-3	A-4	1.0	B-1	1.0	—	—	0.511	82.4	89.0	2.22
2-4	A-4	0.3	B-1	1.0	—	—	0.527	82.4	87.6	2.40
2-5	A-4	0.5	B-1	1.0	—	—	0.521	82.4	87.8	2.40
2-6	A-4	0.3	B-1	0.3	—	—	0.545	82.0	86.7	2.82
2-7	A-4	0.5	B-1	0.5	—	—	0.534	82.0	87.5	2.71
2-8	A-4	1.0	B-1	1.0	C-1	1.0	0.543	82.6	89.4	3.43
2-9	A-10	1.0	B-1	1.0	—	0.0	0.513	82.5	88.8	2.26
<u>Comparative product</u>										
2-1	A-4	3.0	—	—	—	—	0.578	82.1	86.9	3.48
2-2	—	—	B-1	3.0	—	—	0.570	82.0	85.1	3.01
2-3	—	—	—	—	C-1	1.0	0.605	81.2	86.0	4.81
2-4	—	—	B-1	1.0	C-1	1.0	0.592	81.5	84.8	4.61
2-5	Blank (without any paper quality improver)						0.588	81.7	86.3	3.35

Thus, the present invention has achieved unexpected results that sufficiently rebut the instant rejections. In light of the objective evidence of unexpected results provided in Applicants' specification, the balance of the *Graham* factor test decidedly tips in favor of a finding of non-obviousness because Applicants' process clearly provides an unexpectedly high yield as compared to the cited references' processes. Reconsideration and withdrawal of these rejections are respectfully requested.

Conclusion

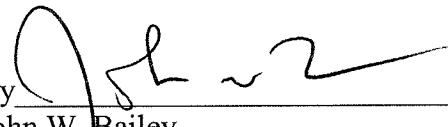
A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Eugene T. Perez (Reg. No. 48,501) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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